

SOME SIGNIFICANT WILDLIFE STRIKES TO CIVIL AIRCRAFT IN THE UNITED STATES, 1990 – MARCH 2001

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The U.S. Department of Agriculture, through an interagency agreement with the Federal Aviation Administration, compiles a database of all reported wildlife strikes to U.S. civil aircraft and to foreign carriers experiencing strikes in the USA. We have compiled about 34,000 strike reports from 1,100 airports, 1990-2000 (about 6,000 strikes in 2000), but estimate that this represents only about 20% of the strikes that have occurred. The following examples from the database are presented to show the serious impacts that strikes by birds or other wildlife can have on aircraft. These examples, from throughout the USA, demonstrate the widespread and diverse nature of the problem. The examples are not intended to highlight or criticize individual airports because strikes have occurred on almost every airport in the USA. Many of the strike examples reported here occurred off airport property during approach or departure. For more information on wildlife strikes, visit www.birdstrike.org or to report a strike, visit wildlife.pr.erau.edu/strikeform/birdstrikeform.html.

Date: 11 January 1990
Aircraft: Hawker Siddeley
Airport: John Tune (TN)
Phase of Flight: Takeoff
Effect on Flight: Not reported
Damage: Engine
Wildlife Species: White-tailed deer
Comments from Report: Several deer were struck during takeoff. One was completely ingested in the left engine. The impact tore the engine loose from the aircraft. The aircraft had to be replaced at a cost of \$1.4 million.

Date: 12 June 1990
Aircraft: Fairchild Metro III
Airport: Burke Lakefront (OH)
Phase of Flight: Landing roll
Effect on Flight: None
Damage: Engine
Wildlife Species: Gull
Comments from Report: Ingested a gull in #2 engine during landing. Engine was replaced. Cost to replace engine was \$17,000 and time out of service was 24 hours.

Date: **09 October 1990**
Aircraft: Citation 550
Airport: DeKalb Peachtree (GA)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing, engine shut down
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Ingested a bird in #1 engine during takeoff. Vibration increased and the engine was shut down. Fan and inlet guide vanes were destroyed. Time out of service was 65 hours. Cost of repairs estimated at \$105,000.

Date: **05 November 1990**
Aircraft: Bae-3200
Airport: Michiana Regional (IN)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff, engine shut down
Damage: Engines, & props
Wildlife Species: Doves
Comments from Report: Doves were ingested in both engines. Engines were destroyed. Time out of service was 60 hours. Cost of repairs estimated at \$1 million.

Date: **28 August 1991**
Aircraft: Cessna 550
Airport: Person County (NC)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Engine
Wildlife Species: Doves
Comments from Report: Right engine inlet was damaged by the temperature probe being tossed back and forth prior to going through the fan. All 28 fan blades were bent, torn and chipped. Stator behind fan was damaged. Time out of service was 70 hours. Cost of repairs was \$160,000.

Date: **12 November 1991**
Aircraft: DC-10
Airport: Chicago O'Hare Intl (IL)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Engines
Wildlife Species: American crow
Comments from Report: The #1 engine was shut down and the plane returned to land after ingesting a crow (or crows) on takeoff. Parts of the engine came out the side and damaged the #2 engine.

Date: 24 November 1991
Aircraft: Learjet 35
Airport: Sullivan County Intl. (NY)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Engine, wing, tail
Wildlife Species: Gulls
Comments from Report: Struck 8 gulls. Damaged wing and #1 engine causing 80% thrust loss. Landed safely. Time out of service was 3 weeks. Cost of repairs was \$340,000.

Date: 30 December 1991
Aircraft: Citation 550
Airport: Angelina County (TX)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Engine
Wildlife Species: Turkey vulture
Comments from Report: Ingested 1-2 vultures in #1 engine during takeoff. Engine had an uncontained failure, fire and vibration with 100% thrust loss. Wing and fuselage received damage from engine shrapnel. Time out of service was 2 weeks. Cost of repairs \$552,500.

Date: 2 February 1992
Aircraft: Piper 28
Airport: Sandstone (MN)
Phase of Flight: Approach
Effect on Flight: Impacted trees and ground
Damage: Aircraft destroyed
Wildlife Species: Deer
Comments from Report: Just prior to touchdown, a deer ran toward and collided with the aircraft. The pilot added power and aborted the landing. Loss of engine power was experienced during the climb and the aircraft crashed into trees then the ground ¼ mile south of airport. Pilot was seriously injured and the aircraft was destroyed. The NTSB found that the deer had damaged the gascolator and fuel starvation resulted.

Date: 10 August 1992

Aircraft: Cessna 441
Airport: Lee Gilmer Memorial (GA)
Phase of Flight: Climb
Effect on Flight: Impacted ground
Damage: Destroyed
Wildlife Species: Unknown birds

Comments from Report: Immediately after takeoff, aircraft hit birds. Right engine lost power and aircraft would not maintain altitude. Pilot was forced to land in a residential area ¼ miles from Gainesville Airport. Both pilot and passenger were seriously injured. NTSB reported that pilot shut down wrong engine and did not follow emergency checklist. Aircraft valued at between \$690,000-\$1.7 million.

Date: 04 September 1992

Aircraft: Aero Commander S2R
Airport: Hondo (TX)
Phase of Flight: Landing
Effect on Flight: Swerved to avoid
Damage: Destroyed
Wildlife Species: Deer

Comments from Report: Pilot swerved to avoid a deer crossing the runway and went off the runway, destroying the aircraft. Aircraft worth \$65,000 to \$85,000.

Date: 24 October 1992

Aircraft: B-747
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Herring gulls

Comments from Report: Numerous birds were struck on departure. Gull was ingested causing vibration in the engine. Aircraft made a precautionary landing. Passengers were put on another aircraft and departed the next day. Four fan blades were bent. Replacement assembly and maintenance had to be flown from Tokyo for repairs. Cost reported to be \$750,000 which included hotel, lost revenue and repairs.

Date: 24 March 1993
Aircraft: Bell BHT-37
Airport: En route
Phase of Flight: En route
Effect on Flight: Impacted water
Damage: Aircraft destroyed
Wildlife Species: Unknown bird
Comments from Report: During cruise pilot heard a loud bang and felt vibration in rudder pedals then lost all yaw control. Pilot thought the tail rotor struck a large sea bird as many were in the area. He maintained directional control and tried to lower the helicopter so that the passenger (a ship's captain) could reach small boats being lowered by his ship nearby. The passenger jumped before the pilot gave the okay and was killed. The pilot subsequently made a running landing on the water and was hoisted on board the ship.

Date: 10 June 1993
Aircraft: Learjet 25
Airport: Port Columbus Intl. (OH)
Phase of Flight: Climb
Effect on Flight: Precautionary landing, engine shut down
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Ingested a bird in #2 engine during climb out. Engine shut down and was completely destroyed. Time out of service was 48 hours. Cost of repairs was \$254,000.

Date: 22 October 1993
Aircraft: B-757
Airport: Salt Lake City (UT)
Phase of Flight: Climb (2,500' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Ingested a bird in #1 engine during climb out. High pressure turbine damage. Engine was replaced. Cost was \$300,000.

Date: 28 October 1993
Aircraft: B-757
Airport: Orlando Intl. (FL)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Engine, tires
Wildlife Species: Cattle egrets
Comments from Report: Takeoff was aborted due to multiple bird strikes (35). Three tires on right gear were blown and aircraft was towed to the gate. Ten to twelve birds were ingested damaging fan blades and the engine cowl.

Date: 29 October 1993
Aircraft: Beechcraft 1900
Airport: En route (IA)
Phase of Flight: En route
Effect on Flight: Emergency landing
Damage: Windshield, wing
Wildlife Species: Duck
Comments from Report: A duck shattered the windshield and hit the captain who was injured from flying glass. The wing was also struck and a 1 ft square piece of aluminum was peeled off. Time out of service was 5 days.

Date: 3 December 1993
Aircraft: Cessna 550
Airport: DuPage (IL)
Phase of Flight: Climb (200' AGL)
Effect on Flight: Diverted, emergency landing
Damage: Engine
Wildlife Species: Geese
Comments from Report: Struck a flock of geese. Loud bang, followed by unstable flight. Lost power to #2 engine and had a substantial fuel leak on left side. Emergency was declared and aircraft landed safely at Midway. Both engines had to be replaced. Time out of service was 90 days. Cost of repairs was \$800,000.

Date: 16 May 1994
Aircraft: Bell BHT-47
Airport: En route (OK)
Phase of Flight: En route
Effect on Flight: Impacted ground
Damage: Aircraft destroyed
Wildlife Species: Unknown birds
Comments from Report: Witnesses heard a loud noise and saw an object separate from the second of two helicopters. The helicopter then impacted inverted in the back yard of a residence. The pilot of the first helicopter said he had warned the second pilot of a flock of birds and that he had to bank sharply to avoid them. NTSB said probable cause was loss of control due to pilot's improper use of the cyclic and collective controls when he maneuvered abruptly to avoid colliding with a flock of birds. Two fatalities.

Date: 15 July 1994
Aircraft: Cessna 172
Airport: En route (FL)
Phase of Flight: En route
Effect on Flight: Impacted water
Damage: Aircraft destroyed
Wildlife Species: Pelican
Comments from Report: Aircraft was seen flying about 200 ft above the water along the beach. A large bird collided with the windshield. The aircraft rolled inverted and hit the water. The pilot fatally injured.

Date: 13 January 1995
Aircraft: L-1011
Airport: Portland (OR)
Phase of Flight: Takeoff
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Gull
Comments from Report: Ingested a gull in #3 engine on takeoff. Loud booms came from the engine that was then shut down after several compressor stalls. Pilot declared an emergency and returned safely. Time lost about 24 hours. Cost of repairs was \$300,000.

Date: 14 May 1995
Aircraft: BA-31 Jetstream
Airport: Capital (IL)
Phase of Flight: Climb (200 AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Rock doves
Comments from Report: At least two rock doves were ingested in the #1 engine. Engine lost 50% of thrust. Required a complete engine change. Cost was reported at \$1.5 million and time lost was 15 hours.

Date: 03 June 1995

Aircraft: Concorde
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Landing
Effect on Flight: Aircraft was towed to gate
Damage: Engines
Wildlife Species: Canada geese

Comments from Report: Aircraft ingested a Canada goose into the #3 engine which had an uncontained failure causing parts to go into the #4 engine. Both engines were destroyed. Flames and smoke were seen coming from both engines. Cost was over \$9 million. Aircraft was out of service for 5 days. Cost was over \$9 million. The NY Port Authority paid \$5.3 million in compensation for losses.

Date: 19 September 1995

Aircraft: Airbus 320
Airport: La Guardia (NY)
Phase of Flight: Landing
Effect on Flight: None
Damage: Engine
Wildlife Species: Canada geese

Comments from Report: Aircraft struck several geese that were on either side of the runway centerline. Tower reported flames coming from the engine. There were no cockpit indications of fire. Two fan blades were damaged and 12 dead geese were removed from the runway. Time out of service was 48 hours and cost was \$2.5 million.

Date: 10 October 1995

Aircraft: Dassault Falcon 900
Airport: San Francisco Intl. (CA)
Phase of Flight: Climb (800' AGL)
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Geese or herons

Comments from Report: One or two birds struck the #3 engine. Engine was shut down due to vibration and temperature increase. Time out of service was 48 hours and cost was estimated at \$1 million.

Date: 10 December 1995

Aircraft: B-747
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Approach (7,500' AGL)
Effect on Flight: Not reported
Damage: Engines, cowling, wing, fuselage
Wildlife Species: Snow geese
Comments from Report: As the aircraft broke through a cloudbank, it was struck by a flock of snow geese, which sounded like sandbags hitting. The impact destroyed one engine, damaged several fan blades on another and extensively damaged the airframe. Repairs cost approximately \$6 million.

Date: 8 January 1996

Aircraft: B-737
Airport: Sacramento Metro (CA)
Phase of Flight: Climb (750' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Duck or goose
Comments from Report: Ingested a bird in #2 engine during climb. Vibration increased and crew throttled back and returned to land. One fan blade separated and other blades were damaged by re-ingestion of broken blade fragments. Engine was replaced.

Date: 9 January 1996

Aircraft: B-737
Airport: Reno/Tahoe Intl. (NV)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing & engine shut down
Damage: Engine
Wildlife Species: Snow goose
Comments from Report: Ingested a large bird during rotation. #1 engine failed and sparks were observed. Landed runway 16L because 16R had debris. Three fan blades were fractured with associated damage throughout the engine. Engine was replaced.

Date: 31 March 1996

Aircraft: B-737
Airport: Kansas City Intl. (MO)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Medium to large bird
Comments from Report: Airport operations found a piece of inlet cooling duct on runway from a B-737 that had just taken off. Aircraft returned and landed safely. Engine had several damaged guide vanes. Aircraft was out of service about 24 hours.

Date: 2 June 1996
Aircraft: B-737
Airport: Chicago Midway (IL)
Phase of Flight: Climb (100' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Gull
Comments from Report: Ingested a gull during climb out. Tower observed flames from #2 engine and advised pilot who declared an emergency and returned to land without incident. Emergency equipment was on the runway. Aircraft landed using single engine landing procedures. Core and all fan blades were damaged. Engine was rebuilt.

Date: 8 July 1996
Aircraft: B-737
Airport: Nashville Intl. (TN)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Engine
Wildlife Species: American kestrel
Comments from Report: Ingested a kestrel into left engine resulting in a compressor stall and an aborted takeoff. Aircraft overran the runway. Fire/rescue arrived, confirmed no fire and noted tires were deflating and smoking. Evacuation slides were de-armed and cabin doors opened for ventilation. Fire erupted from right brake and was extinguished by fire personnel. Flight attendants heard fireman shout "fire" and commanded an evacuation. One passenger was seriously injured, 4 others received minor injuries.

Date: 7 August 1996
Aircraft: B-737
Airport: Orlando Intl. (FL)
Phase of Flight: Climb (20' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Duck
Comments from Report: Ingested a duck during climb out. The engine began a series of compressor stalls. Time out of service was 200 hours and cost was \$1,004,000.

Date: 5 October 1996

Aircraft: B-727
Airport: Washington National (DC)
Phase of Flight: Climb (2,000' AGL)
Effect on Flight: Precautionary landing and engine shut down
Damage: Engine
Wildlife Species: Gulls
Comments from Report: Aircraft struck a flock of gulls just after takeoff, ingesting at least one bird. Engine began to vibrate and was shut down. A burning smell entered the cockpit. Emergency was declared and aircraft, carrying HUD Secretary Henry Cisneros along with 52 other passengers, returned to land at Washington National. Airport Fire and Rescue was on hand. Aircraft taxied to the ramp without incident. Engine blades were damaged.

Date: November 1996

Aircraft: B-727
Airport: Chicago O'Hare Intl. (IL)
Phase of Flight: Climb (25,000' AGL)
Effect on Flight: Precautionary landing
Damage: Window
Wildlife Species: Unknown bird
Comments from Report: Bird broke out pane of window. Returned to ORD from 70 miles south. Dumped 6,000 pounds of fuel. Landing uneventful.

Date: 22 November 1996

Aircraft: MD-80
Airport: Sacramento Intl. (CA)
Phase of Flight: Climb (75' AGL)
Effect on Flight: Precautionary landing & engine shut down
Damage: Engine
Wildlife Species: Gulls
Comments from Report: Several gulls were ingested just after takeoff causing the engine to lose power. Engine was shut down and an emergency was declared. The plane was forced to land much heavier than usual because of a full fuel load. There were no injuries and passengers were transferred to a replacement jet. Fan blades and engine were damaged. Runway was closed for approximately ½ hour.

Date: 13 December 1996
Aircraft: BE-1900
Airport: Arnold Palmer Regional (PA)
Phase of Flight: Landing roll
Effect on Flight: Skidded to stop on runway
Damage: Landing gear
Wildlife Species: White-tailed deer
Comments from Report: Struck deer on landing causing left main gear to collapse. Prop blades broke, underside of fuselage, wing tip and aileron flap were damaged. Aircraft was evacuated. No injuries.

Date: 7 January 1997
Aircraft: MD-80
Airport: Dallas-Fort Worth (TX)
Phase of Flight: Climb (50' AGL)
Effect on Flight: Precautionary landing
Damage: Engine, wing and radome
Wildlife Species: Blackbirds (437)
Comments from Report: Aircraft struck over 400 birds just after takeoff. Almost every part of the plane was hit. Pilot declared an emergency and returned to land without event. Substantial damage was found on various parts of the aircraft. #1 engine had to be replaced. Runway was closed for an hour. Personnel were sent to disperse another large flock on the airfield. Cost of repairs estimated at \$219,000.

Date: 26 January 1997
Aircraft: B-737
Airport: Orlando Intl. (FL)
Phase of Flight: Climb (900' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Sandhill crane
Comments from Report: The aircraft struck a sandhill crane after departing MCO totally destroying the #1 engine. Pilot made a precautionary landing.

Date: 27 January 1997
Aircraft: DC-10
Airport: Los Angeles Intl. (CA)
Phase of Flight: Takeoff
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Gull
Comments from Report: Crew thinks they hit a gull on takeoff. #3 engine had a vibration with oil quantity fluctuation. When oil quantity dropped to zero, engine was shut down $\frac{3}{4}$ of the way to Japan. Crew had planned to divert to Anchorage but decided against it due to poor weather. Feathers found in engine after landing. Cost was \$1.5 million.

Date: 28 February 1997
Aircraft: Beechcraft 1900
Airport: Charleston/AFB Intl. (SC)
Phase of Flight: Approach (3,000' AGL)
Effect on Flight: None
Damage: Windshield
Wildlife Species: Egret or Heron (large white)
Comments from Report: Windshield on the right side shattered. Co-pilot received facial abrasions and needed medical attention to remove glass fragments from his eyes.

Date: 05 April 1997
Aircraft: Cessna 90 King Air
Airport: Orlando Executive (FL)
Phase of Flight: Approach (200' AGL)
Effect on Flight: Nearly stalled below 150 ft.
Damage: Radome, nose, & prop
Wildlife Species: Gulls
Comments from Report: Over 1,000 gulls covered the first 1,000 ft of runway. Pilot struck between 11 and 100, which caused a low altitude stall with miraculous recovery. He could not see out of the windshield. Aircraft bounced 4 times upon landing. Pilot believes there was insufficient notification and supervision of the condition on the airport. Out of service 240 hours, cost \$13,000.

Date: 19 June 1997
Aircraft: RV 6 - Experimental
Airport: Bountiful Skypark (UT)
Phase of Flight: Climb (100' AGL)
Effect on Flight: Crash landing
Damage: Entire aircraft
Wildlife Species: Homing pigeon
Comments from Report: Bird went through the canopy, which started to break apart. The pilot was forced to land in a nearby hayfield. Most of the damage occurred during landing and tip-over. The hay was 2-3 ft tall. The pilot sustained facial lacerations and required stitches. Time out of service was about 6 months and cost to repair was \$30,000.

Date: 17 July 1997
Aircraft: Mitsubishi MU-2
Airport: Hardin County (OH)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Radome, nose, engines, prop, landing gear, tail & wings.
Wildlife Species: Geese
Comments from Report: Geese were on the ground extending across the runway and about 50 ft to each side in a line. Repairs took about 50 days and cost over \$110,000.

Date: 23 July 1997
Aircraft: Beechcraft 58
Airport: Mid-America Industrial (OK)
Phase of Flight: Landing roll
Effect on Flight: Other
Damage: Radome, engines #1 and #2, prop & landing gear
Wildlife Species: Deer
Comments from Report: During the landing roll a small herd of deer ran across the runway, directly in front of the plane. One deer struck the nose wheel, then bounced against the nose links causing it to collapse. Both props struck the ground. Time out of service was 3 months and cost of repairs was \$80,000.

Date: 21 August 1997
Aircraft: B-737
Airport: Portland Intl. (OR)
Phase of Flight: Climb (1,400' AGL)
Effect on Flight: Precautionary landing
Damage: Radome, nose, engine #1
Wildlife Species: Mallards
Comments from Report: Pilot reported striking 12-15 ducks. Aircraft returned and landed safely. Radome and all engine fan blades were replaced. Time out of service was 15 hours and cost over \$100,000.

Date: 20 September 1997
Aircraft: Bell 206
Airport: 12 mi SE of Houma (LA)
Phase of Flight: En route
Effect on Flight: Lost control of aircraft
Damage: Rotor blades, tail, landing gear, lights, air frame
Wildlife Species: Unknown bird
Comments from Report: Control tube was damaged causing a hard landing (at 35 mph) which made the rotor blades flex and sever the tail boom. Airframe and skid tubes were damaged. Pilot had a disc compression injury. Cost to repair aircraft was \$168,000. Time lost was over 3 months.

Date: 26 September 1997
Aircraft: MD-80
Airport: Portland Intl. (OR)
Phase of Flight: Approach
Effect on Flight: Other
Damage: Radome, nose
Wildlife Species: Geese
Comments from Report: A flock of geese was struck on approach. One punctured the radome, which was replaced. Repairs took 40 hours. Estimated cost was \$100,000.

Date: 08 October 1997
Aircraft: B-727
Airport: Orlando Intl. (FL)
Phase of Flight: Climb (1,750 AGL)
Effect on Flight: Precautionary landing
Damage: Windshield
Wildlife Species: Unknown bird
Comments from Report: Right cockpit window shattered. First officer had possible glass in eye.

Date: 13 October 1997
Aircraft: B-757
Airport: Logan Intl. (MA)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Engine, radome
Wildlife Species: Duck and great blue heron
Comments from Report: Aircraft departed struck bird on takeoff. Both wings were struck. Radome was damaged and engine nacelle had a 2-½ foot dent. Four fan blades were damaged.

Date: 15 October 1997
Aircraft: B-757
Airport: Los Angeles Intl. (CA)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Engines #1 and #2
Wildlife Species: Rock doves (pigeons)
Comments from Report: Aborted takeoff after striking and ingesting several pigeons. Aircraft returned to the gate and inspection revealed damage to both engines.

Date: 05 November 1997
Aircraft: B-737
Airport: McCarran Intl. (NV)
Phase of Flight: Landing roll
Effect on Flight: None
Damage: Engine
Wildlife Species: Pigeon or gull
Comments from Report: Bird was ingested in #2 engine during landing while in reverse thrust. Immediate engine vibration occurred that lasted until a return to idle thrust. At least nine fan blades had significant damage. Time out of service was 3-5 hours.

Date: 15 November 1997
Aircraft: Airbus 320
Airport: John Wayne (CA)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Large bird
Comments from Report: A large bird was ingested into one of the engines causing a fire. Passengers heard a loud boom, then the aircraft dropped momentarily before recovering altitude. The aircraft circled for 30 minutes before making an emergency landing. There were no injuries. Bird hit blades on starboard fan that broke or bent all blades causing damage to cowling and to system behind the fan. Engine changed. Time out of service over 30 hrs. Cost of repairs \$300,000 and other cost \$800,000

Date: 16 November 1997
Aircraft: BA-41 Jetstream
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Approach
Effect on Flight: Other
Damage: Windshield, flight instruments
Wildlife Species: Gulls
Comments from Report: Hit gulls about 20 miles from airport. Both panes of the captain's windshield were shattered, and the captain's flight instruments were knocked out. First officer took over and landed successfully, no injuries. Damage estimate is \$50,000.

Date: 24 November 1997
Aircraft: GAF N24 Nomad
Airport: La Ceiba (nearest town) **
Phase of Flight: En route
Effect on Flight: Crashed
Damage: Aircraft 70% destroyed
Wildlife Species: Vulture
Comments from Report: A 19 seat Honduran airliner crashed at a northern Honduran town near a football field after its right engine caught fire from a bird strike. Of the 12 on board, 4 had serious injuries and 8 had minor injuries.

Date: 30 November 1997
Aircraft: Canard Pusher
Airport: nearest location - Mojave Desert (CA)
Phase of Flight: En route
Effect on Flight: Precautionary landing
Damage: Canopy & prop
Wildlife Species: Unknown bird (maybe duck - web-footed)
Comments from Report: Aircraft was leveled off at 2500 ft AGL, speed 150 mph. Pilot looked up just in time to see a bird about 50 ft above flight path and several hundred feet ahead. Within 2 seconds, bird winged over and dived down striking the canopy head on. Canopy shattered and was completely missing from pilot's head forward. Pilot's headset was knocked off and he sustained facial injury. Pilot recovered headset, declared emergency and turned back to the airport. Glasses protected him from direct wind in his face at 100 mph. Prop had a chunk missing from each blade and one had a split from tip toward center about 10" long. Web-footed bird weighed about 1.5 lbs.

Date: 01 December 1997
Aircraft: B-737
Airport: Lehigh Valley Intl. (PA)
Phase of Flight: Takeoff
Effect on Flight: Diverted to PHL
Damage: Engines #1 and #2
Wildlife Species: Gulls
Comments from Report: Emergency was declared and flight was diverted to Philadelphia. Both engines and cowlings were damaged. Aircraft out of service 20 hours, cost of repairs \$500,000.

Date: 13 December 1997
Aircraft: B-737
Airport: Wilkes-Barre/Scranton Intl. (PA)
Phase of Flight: Landing roll
Effect on Flight: None
Damage: Engine, nose cowl
Wildlife Species: White-tailed deer
Comments from Report: Captain radioed tower that he believed he hit something. Aircraft was examined at the terminal and found damage to nose cowl and engine cowl and one fan blade. Out of service 48 hours awaiting new parts.

Date: 17 December 1997
Aircraft: Bellanca Super Viking
Airport: Jefferson County (OH)
Phase of Flight: Takeoff
Effect on Flight: Aircraft lost power
Damage: Aircraft destroyed
Wildlife Species: White-tailed deer
Comments from Report: Aircraft hit a deer on takeoff and lost power, crashing into a heavily wooded area. Aircraft was destroyed. Pilot was life-flighted out, passenger had minor injuries.

Date: 04 January 1998
Aircraft: B-737
Airport: Salt Lake City Intl. (UT)
Phase of Flight: Climb (200' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Large birds
Comments from Report: Struck large birds 10 miles west of airport. Significant damage to #1 engine. Engine ran rough until touchdown. Engine was shut down after landing.

Date: 09 January 1998
Aircraft: B-727
Airport: Houston Intercontinental (TX)
Phase of Flight: Climb (6,000 AGL)
Effect on Flight: Precautionary landing
Damage: Engine, radome, right wing
Wildlife Species: Snow geese
Comments from Report: Aircraft encountered a flock of birds. Three to five birds were ingested. Engine lost all power and was destroyed, radome was torn from the aircraft and leading edges of both wings were damaged, pitot tube for first officer was torn off. Intense vibration in airframe and noise level in cockpit increased to the point that communication between crewmembers became difficult. Emergency was declared. Flight returned safely to Houston. Time out of service was 216 hours and cost was \$468,000.

Date: 23 January 1998
Aircraft: Cessna 208
Airport: Salt Lake City Intl. (UT)
Phase of Flight: Approach
Effect on Flight: Unknown
Damage: Stabilizer & elevator
Wildlife Species: Unknown bird (probably a goose)
Comments from Report: Aircraft had a bird strike, which jammed the elevator. Pilot landed safely using power and elevator trim. Bird hit the end of the left stabilizer, peeled back some skin which jammed the elevator in the neutral position.

Date: 27 January 1998
Aircraft: Cessna 340
Airport: Wagoner Airstrip (OK)
Phase of Flight: Landing roll
Effect on Flight: Other
Damage: Aircraft destroyed
Wildlife Species: Deer
Comments from Report: Aircraft struck 2 deer on landing, the gear collapsed and the fuel tank was punctured resulting in a fire which destroyed the aircraft.

Date: 29 January 1998
Aircraft: Cessna 500
Airport: Horseshoe Bay Airpark (TX)
Phase of Flight: Landing roll
Effect on Flight: Unknown
Damage: Fuel tank
Wildlife Species: Deer
Comments from Report: Aircraft struck a deer on landing. The fuel tank was punctured, spilling 200 gallons of fuel.

Date: 3 February 98
Aircraft: Cessna Citation
Airport: Watsonville (CA)
Phase of Flight: Takeoff (rotation)
Effect on Flight: Engine shut down
Damage: Engines #1 and 2, wing, fuselage, tail
Wildlife Species: Gulls
Comments from Report: Flew through a flock of 20 gulls and ingested 1 into right engine causing it to seize. No injuries. Replaced right engine, 4 fuselage windows, left leading edge and de-ice boot, both heated leading edges, large fuselage panel and 3 other wing/fuselage panels. Time out of service 10 weeks, cost over \$470,000.

Date: 10 February 1998
Aircraft: Bell 206 helicopter
Airport: Nearest town - Scappoose (OR)
Phase of Flight: En route
Effect on Flight: Precautionary landing
Damage: Windshield
Wildlife Species: Mallard
Comments from Report: A news helicopter reported a bird strike 3-5 miles southeast of Scappoose, OR. A mallard came through the windshield. No injuries.

Date: 24 February 1998
Aircraft: B-727
Airport: Austin Bergstrom Intl. (TX)
Phase of Flight: Climb (1,300 AGL)
Effect on Flight: Engines shut down, precautionary landing
Damage: Engine
Wildlife Species: Large birds
Comments from Report: #1 engine compressor stalled then seized after ingesting large birds. Engine was replaced. Time out of service 15 hrs, cost \$5 million.

Date: 24 February 1998
Aircraft: B-747
Airport: Nairobi Jomo Kenyatta *
Phase of Flight: Climb
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Lappet-faced vulture
Comments from Report: Engine had an uncontained failure. Cost \$3.7-\$4.0 million. Aircraft out of service about 240 hours.

Date: 04 March 1998

Aircraft: Piper 23
Airport: En Route (NJ)
Phase of Flight: En route
Effect on Flight: Lost control of airplane
Damage: Aircraft destroyed
Wildlife Species: Unknown

Comments from Report: Witness saw the vertical stabilizer begin to oscillate and then separate from the plane. The plane crashed into a multiple family dwelling. The NTSB investigation found an impact mark on the horizontal stabilizer which was consistent with a soft-bodied impact. Although no blood or bird remains were found, one witness reported seeing several birds flying in the area at the time of the accident. Both the pilot and a passenger were killed.

Date: 06 March 1998

Aircraft: B-727
Airport: Boise Air Terminal (ID)
Phase of Flight: Takeoff
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Unknown bird

Comments from Report: Bird was ingested into engine, which had an uncontained failure. Engine was shut down and the aircraft landed without incident. Runway was closed for about 1 hour due to fan blade parts on runway.

Date: 09 March 1998

Aircraft: Merlin IV
Airport: Denver Intl. (CO)
Phase of Flight: Approach
Effect on Flight: Unknown
Damage: Windshield
Wildlife Species: Unknown bird

Comments from Report: While inbound to Denver, pilot reported a bird strike on the windshield, which shattered. Pilot reported he was okay, but had taken glass in the face.

Date: 13 March 1998
Aircraft: B-727
Airport: Valencia Intl. (Venezuela)*
Phase of Flight: Climb (3,600 AGL)
Effect on Flight: Engines shut down, Precautionary landing
Damage: Engine
Wildlife Species: Vulture
Comments from Report: On climb-out, pilot saw a large black bird pass over top of the cockpit (pilot ducked). It struck #2 engine causing severe vibration. Crew secured engine, dumped 12,000 pounds of fuel, declared an emergency and landed at Valencia. Engine was substantially damaged. Time out of service 42 hours.

Date: 24 March 1998
Aircraft: B-737
Airport: En route from Texas to North Carolina
Phase of Flight: En route
Effect on Flight: Unknown
Damage: Radome
Wildlife Species: Goose
Comments from Report: Aircraft struck a goose at 17,000 feet. Landed with an engine cowling missing. Virginia State Police were searching for the cowling.

Date: 04 April 1998
Aircraft: MD-80
Airport: La Guardia (NY)
Phase of Flight: Takeoff (rotation)
Effect on Flight: Precautionary landing
Damage: Radome
Wildlife Species: Canada geese
Comments from Report: Aircraft struck multiple geese at rotation. Radome had a large hole. The aircraft had an air speed problem. Flight was diverted to Newark.

Date: 06 April 1998
Aircraft: Cessna 172
Airport: Mallards Landing (GA)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Aircraft destroyed
Wildlife Species: White-tailed deer
Comments from Report: Deer crossed in front of aircraft during takeoff with nose gear up. Aircraft swerved to avoid a deer, ran off the runway, flipped over and was destroyed. Pilot was injured.

Date: 14 April 1998
Aircraft: B-727
Airport: Dane Co. Regional (WI)
Phase of Flight: Climb (1,500 AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Small bird
Comments from Report: A bird was ingested when the aircraft was 2.5-3 miles from airport. The pilot made an emergency landing without incident. Even though the C1 fan was damaged beyond limits, the engine remained operational. The engine was removed and replaced. Time out of service 48 hours. Cost of repairs was estimated at \$15,000.

Date: 28 April 1998
Aircraft: Piper Cherokee
Airport: Vandenburg (FL)
Phase of Flight: Climb (550 AGL)
Effect on Flight: Engine shut down
Damage: Aircraft destroyed
Wildlife Species: Turkey vulture
Comments from Report: During a training flight, the aircraft struck a bird, which damaged the fuel system. The aircraft experienced fuel starvation and subsequently crashed into a field. Cost was \$105,000.

Date: 03 May 1998
Aircraft: B-767
Airport: Dallas-Fort Worth (TX)
Phase of Flight: Climb (3,000 AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Major vibration after impact during climb power setting. Engine power reduced to idle. Immediate landing and shut down engine while exiting runway.

Date: 07 May 1998
Aircraft: B-727
Airport: Colorado Springs Metro (CO)
Phase of Flight: Climb (3,500' AGL)
Effect on Flight: Engine shut down, precautionary landing
Damage: Radome, wing, fuselage and engine
Wildlife Species: Canada geese
Comments from Report: Aircraft struck several geese just north of the airport. Crew felt moderate to severe vibration due to ingestion of one or more birds. Aircraft lost essential electrical power, which was restored by a generator. #3 engine had an uncontained failure. Shrapnel was ejected through the engine case, which severed electrical wires and punctured the anti-ice bleed air duct. Radome was cracked, and upper engine cowling and thrust reverser were also damaged. Time out of service was 98 hrs. Cost was \$1.4 million. NTSB investigated.

Date: 11 May 1998
Aircraft: B-747
Airport: Unknown (Buenos Aires to Miami)
Phase of Flight: Unknown
Effect on Flight: None
Damage: Radome, wing, fuselage and engine
Wildlife Species: Unknown bird
Comments from Report: Crew was unaware bird strike occurred. Damage found during maintenance post flight inspection. Damage pattern indicates bird impacted engine cone and separated into 2 parts, damaging compressor blades in 2 areas 180 degrees apart. Nose cone and 12 compressor blades were damaged. Time out of service was 14 hrs. Cost was \$132,000.

Date: 25 May 1998
Aircraft: MD-80
Airport: Seattle-Tacoma Intl. (WA)
Phase of Flight: Approach (3,100' AGL)
Effect on Flight: Not reported
Damage: Fuselage
Wildlife Species: Eagle
Comments from Report: Considerable damage to the fuselage aft of radome.

Date: 28 May 1998
Aircraft: B-767
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Climb (900 AGL)
Effect on Flight: Precautionary landing
Damage: Engine and wing
Wildlife Species: Canada goose
Comments from Report: One goose was ingested shortly after departure. ARFF responded. #2 engine had 1st set of fan blades damaged and there was a hole in the right flap. Aircraft immediately returned to JFK and landed without incident.

Date: 31 May 1998
Aircraft: Piper Cherokee
Airport: Sikeston Memorial Municipal (MO)
Phase of Flight: Landing roll
Effect on Flight: Lost control of aircraft
Damage: Not reported - substantial
Wildlife Species: Deer
Comments from Report: Pilot tried to avoid striking a deer on landing, lost control and struck a tree. Aircraft had substantial damage and pilot was injured.

Date: 02 June 1998
Aircraft: B-747
Airport: Not reported
Phase of Flight: Climb (11,000' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: On climb out, suspected bird strike on #3 engine fan cowling. The cowling broke free, damaging the wing leading edge and upper surface, pneumatic ducting, generator feeder cables and leading edge flap. Time out of service was 336 hrs.

Date: 04 June 1998
Aircraft: Cessna Citation
Airport: Jackson Intl. (MS)
Phase of Flight: Takeoff (rotation)
Effect on Flight: Power pulled back 100%, precautionary landing
Damage: Engine
Wildlife Species: Medium bird
Comments from Report: Pilot declared an emergency and landed safely after ingesting a bird on takeoff. Time out of service was estimated at 1 week. Cost of repairs \$200,000.

Date: 28 June 1998
Aircraft: B-737
Airport: Norfolk Intl. (VA)
Phase of Flight: Takeoff
Effect on Flight: Engines shut down, precautionary landing
Damage: Engine
Wildlife Species: Gull
Comments from Report: One gull was ingested causing the pilot to make a precautionary landing. There was smoke in the cockpit and engine vibration. Three pairs of fan blades were replaced in #2 engine.

Date: 05 July 1998
Aircraft: Piper Comanche
Airport: En route (FL)
Phase of Flight: En route
Effect on Flight: Other
Damage: Windshield
Wildlife Species: Double-crested cormorant
Comments from Report: Pilot never saw bird. Cormorant penetrated the windshield. Pilot sustained facial lacerations from the windshield.

Date: 13 July 1998
Aircraft: B-757
Airport: Dallas-Fort Worth (TX)
Phase of Flight: Climb (600' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Hawk
Comments from Report: A hawk was ingested into the left engine. Tower observed flames coming from the tailpipe. Aircraft returned and landed without incident with 54 passengers and 33,000 lbs. of fuel. Flames were extinguished quickly and the aircraft taxied to the gate without further incident. Outboard portion of at least 4 blades was damaged, two significantly.

Date: 14 July 1998
Aircraft: B-737
Airport: Nashville Intl. (TN)
Phase of Flight: Takeoff (rotation)
Effect on Flight: None
Damage: Engine
Wildlife Species: Small to medium bird
Comments from Report: Ingested 1 bird at rotation. Caused odor in cabin. Engine ran normally. On arrival at Midway, mechanic found several damaged fan blades.

Date: 19 July 1998
Aircraft: B-737
Airport: Dallas-Fort Worth (TX)
Phase of Flight: Climb (3,500' AGL)
Effect on Flight: Reduced engine power, precautionary landing
Damage: Engine
Wildlife Species: Vultures
Comments from Report: Crew saw a flock of vultures prior to impact of 1 or more birds in the vicinity of the #1 engine. Heard impact and smelled freshly baked bird throughout entire cockpit/cabin. Retarded #1 throttle to near idle. Emergency was declared and returned to land uneventfully at DFW.

Date: 22 July 1998
Aircraft: Beechcraft-58
Airport: Antrim County (MI)
Phase of Flight: Landing roll
Effect on Flight: Not reported
Damage: Engines, props, landing gear and flaps
Wildlife Species: White-tailed deer
Comments from Report: Two deer came out on runway. Each prop hit a deer cutting them in half. One was thrown into the left gear and left flap. The other deer went under the right wing striking the right flap. Time out of service was 1 month, and cost was \$33,000.

Date: 22 July 1998
Aircraft: MD-80
Airport: Burbank (CA)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Gulls
Comments from Report: An emergency landing was made after the jetliner ingested a gull into one of its two engines at lift-off. The damaged engine was shut down. All 95 passengers were re-routed. Several flights were canceled.

Date: 7 August 1998
Aircraft: Dassault Falcon 20
Airport: Sioux Gateway (IA)
Phase of Flight: Climb (1,900' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Bird hit wing then went into #1 engine. Engine flamed-out and restarted after hitting 1 bird. Debris from bird packed the air tubes through the engine and caused heat distress when engine relit. Cost was \$59,000. Time out of service was 5 days.

Date: 8 August 1998
Aircraft: B-767
Airport: Philadelphia Intl. (PA)
Phase of Flight: Climb (300' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Gulls
Comments from Report: Five blades were damaged. ARFF responded. Inspection found evidence of core ingestion. Time out of service was 8 hrs.

Date: 11 August 1998
Aircraft: B-737
Airport: Philadelphia Intl. (PA)
Phase of Flight: Takeoff
Effect on Flight: Not reported
Damage: Engine
Wildlife Species: Canada geese
Comments from Report: #1 engine totaled. Aircraft out of service 36 hours.

Date: 15 August 1998
Aircraft: BA-31 Jetstream
Airport: Altoona-Blair County (PA)
Phase of Flight: Landing roll
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Doves & killdeer (22)
Comments from Report: Engine was removed for overhaul. Outbound flight canceled, 17 passengers displaced. Time out of service was 24 hours. Cost was \$56,000.

Date: 20 August 1998
Aircraft: Airbus 300
Airport: Dhaka**
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Landing gear
Wildlife Species: Kite (a bird)
Comments from Report: A fire was started in the back wheels when a bird (kite) swooped down from the sky just as aircraft was about to leave ground. Passengers were evacuated and firemen put out flames. Aircraft was out of service for a few days. Airport officials said 38 flights did not operate from the time of the accident at 0730 until 1800 when the runway was clear.

Date: 25 August 1998
Aircraft: ATR-42
Airport: Reagan Washington National (DC)
Phase of Flight: Approach (150' AGL)
Effect on Flight: None
Damage: Fuselage
Wildlife Species: Unknown birds
Comments from Report: Three holes in bottom of fuselage. Landed without incident. Aircraft was ferried for repairs.

Date: 29 August 1998
Aircraft: B-747
Airport: Unknown
Phase of Flight: Unknown
Effect on Flight: None
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Fan blades were damaged. Evidence of strike found on transit check. Flight crew was unaware of the strike. Time out of service was 48 hrs. Cost of repair was \$75,000.

Date: 29 August 1998
Aircraft: Beechcraft-55
Airport: Quad City (IL)
Phase of Flight: Touch and go
Effect on Flight: Aborted takeoff
Damage: Engines, windshield, wings, landing gear & fuselage
Wildlife Species: Canada geese
Comments from Report: Aircraft struck a flock of geese while practicing touch and go landings at night. Windshield broke and cut the pilot.

Date: 31 August 1998
Aircraft: Cessna 550
Airport: Renton Municipal (WA)
Phase of Flight: Landing flare
Effect on Flight: None
Damage: Engines, wings, landing gear
Wildlife Species: Canada geese
Comments from Report: Geese were sleeping on the runway. Several were struck. Wings and flaps were dented and punctured. Fan blades were damaged in #1 engine. Engine was removed and sent to engine manufacturer for inspection.

Date: 01 September 1998
Aircraft: B-767
Airport: London Heathrow
Phase of Flight: Approach
Effect on Flight: Flight cancelled
Damage: Engines, radome, wings, landing gear
Wildlife Species: Canada geese
Comments from Report: #1 engine ingested geese. Every fan blade in the #1 engine was replaced. Aircraft was grounded for several days. The radar inside the radome was smashed. 25-30 geese were removed from the runway. Cost of repairs over \$1 million.

Date: 6 September 1998
Aircraft: Saab-340
Airport: En route (CA)
Phase of Flight: En route
Effect on Flight: Precautionary landing
Damage: Engine, radome, windshield, nose, prop, wing, tail, fuselage
Wildlife Species: Geese/ducks
Comments from Report: Left window was 85% covered with blood & remains. Window pressure plate was damaged and the radome was caved in.

Date: 18 September 1998
Aircraft: B-737
Airport: Houston Hobby (TX)
Phase of Flight: Approach (2,500' AGL)
Effect on Flight: None
Damage: Engine, fuselage
Wildlife Species: Gulls
Comments from Report: Two birds were struck. One gull was ingested in #2 engine causing vibration. Entire fan assembly was replaced. Cost was approximately \$108,500. Time out of service was 6 hours.

Date: 22 September 1998
Aircraft: Cessna 500
Airport: St. Paul Downtown (MN)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Engine
Wildlife Species: American kestrel
Comments from Report: Five blades were damaged when a kestrel was ingested. Time out of service was 48 hrs. Cost was \$16,000.

Date: 23 September 1998
Aircraft: MD-80
Airport: La Guardia (NY)
Phase of Flight: Climb (1,000' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown birds
Comments from Report: Hit a small flock of birds at night. One hit the clearview window. One or more were ingested in the #1 engine breaking compressor blades and damaging the shroud.

Date: 25 September 1998
Aircraft: Dassault Falcon 20
Airport: Birmingham Intl. (AL)
Phase of Flight: Climb (4,000 AGL)
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Unknown bird(s)
Comments from Report: Hit unknown number of birds at night. One or more were ingested in #2 engine causing vibration and 80% thrust loss. Aircraft returned to the airport and shut the engine down after landing. Two blades were damaged. Time out of service was 168 hours and cost was \$131,000.

Date: 29 September 1998
Aircraft: B-747
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Climb (900' AGL)
Effect on Flight: Precautionary landing, engine shut down
Damage: Engine
Wildlife Species: Gulls
Comments from Report: Engine was shut down because of vibration. Dumped 120,000 lbs. of fuel and landed uneventfully. Uncontained engine failure. Cost was \$136,858. Time out of service was 78 hrs.

Date: 15 October 1998

Aircraft: DC-10
Airport: John F. Kennedy Intl. (NY)
Phase of Flight: Takeoff
Effect on Flight: Engine shut down and precautionary landing
Damage: Engine
Wildlife Species: Herring gull
Comments from Report: One bird was ingested at rotation. Pilot heard a loud thud and was losing power in the #3 engine. A pilot on the ground saw the engine flame out. Engine parts and a carcass were recovered. There was substantial damage to the engine. About 26,000 pounds of fuel had to be dumped over the local community and a HAZMAT team was dispatched. Runway was closed for approximately 30 minutes. 220 passengers were inconvenienced.

Date: 19 October 1998

Aircraft: BA-31
Airport: Binghamton Regional (NY)
Phase of Flight: Takeoff (rotation)
Effect on Flight: Precautionary landing & engine shut down
Damage: Engine
Wildlife Species: Gull
Comments from Report: Pilot reported 1 bird was ingested at rotation. There was a partial loss of power. Aircraft landed safely and shut down engine on taxiway. Crew noticed smoke and flame and discharged fire bottle. No injuries during evacuation.

Date: 19 October 1998

Aircraft: Fokker 100
Airport: Dallas-Fort Worth Intl. (TX)
Phase of Flight: Climb (350' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Turkey vulture
Comments from Report: Bird hit #2 engine. Damage was noted immediately. Reduced power to idle and made precautionary landing. Landing was made overweight which required additional inspections. Engine was replaced.

Date: 23 October 1998
Aircraft: Cessna Citation
Airport: Houston Hobby (TX)
Phase of Flight: Climb (1,000' AGL)
Effect on Flight: Precautionary landing
Damage: Wing, radome, tail, fuselage, windshield
Wildlife Species: Cranes
Comments from Report: Pilot reported a flock of about 30 cranes was encountered during climb. Several birds were struck. A precautionary landing was made to inspect aircraft. Aircraft was out of service for about 30 days and cost \$250,000 to repair.

Date: 04 November 1998
Aircraft: B-747
Airport: Louisville Intl. (KY)
Phase of Flight: Climb (1,500' AGL)
Effect on Flight: Engine shut down and precautionary landing
Damage: Engine
Wildlife Species: Snow geese
Comments from Report: A flock of snow geese caused engine damage soon after takeoff. Parts of the aircraft rained down on a barn at Churchill Downs, which housed several valuable racehorses. Pilot made a precautionary landing. No report was filed for this strike.

Date: 07 November 1998
Aircraft: Cessna Citation
Airport: Fort Smith Regional (AR)
Phase of Flight: Takeoff (rotation)
Effect on Flight: Engine shut down & precautionary landing
Damage: Engine, wing
Wildlife Species: Doves
Comments from Report: A large flock of doves flew into the aircraft at rotation speed. One engine failed. An emergency landing was made. Leading edge of right wing was also damaged. Right engine fan was destroyed. Time out of service 24 hrs, cost of repair \$170,000.

Date: 09 November 1998
Aircraft: B-737
Airport: Los Angeles Intl. (CA)
Phase of Flight: Takeoff (rotation)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Rock doves (pigeons)
Comments from Report: A large flock of doves flew into the aircraft at rotation. At least 12 were struck. An emergency landing was made. Several engine fan blades were damaged, other parts were struck but the damage was undetermined at time of report. The cost of repairs was \$63,500.

Date: 10 November 1998
Aircraft: Aero Commander 500
Airport: Philip Billard Municipal (KS)
Phase of Flight: Climb (3,000' AGL)
Effect on Flight: Precautionary landing
Damage: Engine, windshield, tail, landing gear
Wildlife Species: Geese
Comments from Report: Four geese struck the aircraft over Lake Perry. Pilot declared an emergency and returned to land at Billard Airport. Copilot received injuries to hand and arm. Pilot temporarily lost control. There was major damage to the aircraft. Repair cost unknown at this time. Time out of service 2 months and counting. Parts not available as of 1-22-99.

Date: 13 November 1998
Aircraft: B-737
Airport: Albany County (NY)
Phase of Flight: Takeoff (rotation)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Snow buntings
Comments from Report: A flock of buntings was ingested into the # 1 engine on rotation causing a booming sound and flames streaking from the engine. The smell of smoke entered the cabin and the aircraft made an emergency landing. Ninety-one passengers were re-booked on other flights. Time out of service was 12 hours.

Date: 17 November 1998
Aircraft: B-737
Airport: Western Nebraska Regional (NE)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Deer
Comments from Report: Aircraft struck a buck deer on the runway and proceeded with takeoff, then returned to land. There was major damage to the engine. The flight was canceled, passengers and crew were rerouted the next day. Total cost was \$430,000 for repairs, lost revenue, meals and hotel rooms, and other transportation for passengers.

Date: 19 November 1998

Aircraft: B-747
Airport: Montreal Intl. (Canada)**
Phase of Flight: Approach
Effect on Flight: Engine shut down
Damage: Engine, cowl, radome
Wildlife Species: Snow geese

Comments from Report: A passenger reports, "There was a huge explosion and the plane tipped over to the right. I looked out and you could see the flames coming out of the engine." The pilot calmly told the passengers that they had run into a flock of birds but would be able to land without a problem. The aircraft had 4 engines and made an emergency landing with only three. Electrical problems and smoke in the cockpit were reported. The first stage fan blades were destroyed on the #4 engine, leading edge cowl on #3 engine was damaged, a bird was wedged in the leading edge flaps between the #3 engine and the fuselage, and the radome was badly damaged.

Date: 24 November 1998

Aircraft: B-737
Airport: Baltimore-Washington Intl. (MD)
Phase of Flight: Climb (3,000' AGL)
Effect on Flight: Engine shut down and precautionary landing
Damage: Engine
Wildlife Species: Goose

Comments from Report: Aircraft made an emergency landing after ingesting a goose into the right engine. One passenger reported, "The plane began jerking around and vibrating and everything started to smell like smoke." The pilot had to shut the engine down and land with one engine. Emergency vehicles were standing by and an inspection was made before the aircraft was allowed to taxi to the gate. Over 100 passengers had to be rebooked on other flights. The engine was replaced.

Date: 24 November 1998

Aircraft: Lancair (experimental)
Airport: Camarillo (CA)
Phase of Flight: Climb
Effect on Flight: Precautionary Landing
Damage: Windshield
Wildlife Species: Unknown bird

Comments from Report: Shortly after takeoff a bird went through the windshield, striking the pilot in the eye. With impaired vision, the pilot returned to land safely at airport.

Date: 6 December 1998
Aircraft: B-727
Airport: Southwest Florida Intl. (FL)
Phase of Flight: Takeoff (rotation)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Mottled duck
Comments from Report: Aircraft made an emergency landing after ingesting a bird into one of three engines. Pilot circled for 30 minutes to burn off some of the 39,000 gallons of fuel because they were not at a safe altitude to dump it. Additional fire and rescue crews were called to the scene. Engine had bent blades. All 145 passengers were placed on other flights. No report was filed on this strike. Time out of service was 24 hours. Smithsonian ID'd the bird remains.

Date: 31 December 1998
Aircraft: MD-80
Airport: Chicago O'Hare Intl. (IL)
Phase of Flight: Climb (2,500' AGL)
Effect on Flight: Precautionary landing
Damage: Radome, nose, landing gear door
Wildlife Species: Canada geese
Comments from Report: Struck numerous geese shortly after takeoff. Pilot circled to burn off some fuel before landing overweight. Emergency equipment was at the runway. Aircraft was out of service 8 hours.

Date: 03 January 1999
Aircraft: BAE-146
Airport: Westchester County (NY)
Phase of Flight: Descent (3,000' AGL)
Effect on Flight: First officer took over flight
Damage: Engine cowl, radome and radar unit
Wildlife Species: Mallard ducks
Comments from Report: Aircraft was over the Hudson River valley at 250 mph when it struck a flock of ducks which completely obscured the captain's window and ½ of the first officer's window. The first officer took control of the aircraft and landed. The radome was caved in and the radar unit was damaged. A duck was ingested through the engine and a 2-ft by 4-in strip of sheet metal was ripped off the top of the engine cowl.

Date: 16 January 1999
Aircraft: BA-800
Airport: Manassas Regional (VA)
Phase of Flight: Climb (300' AGL)
Effect on Flight: Precautionary landing
Damage: Engine and landing gear
Wildlife Species: Unknown bird
Comments from Report: Ingested a large bird after takeoff. The engine cowling was damaged, 12 fan blades were bent along with numerous inlet guide vanes and 2 compressor blades. The right hand stall vane was missing and 2 tires had to be replaced. Time out of service was 24 hours and cost to repair damages was \$307,000.

Date: 25 January 1999
Aircraft: Dassault Falcon 10
Airport: Lunken (OH)
Phase of Flight: Climb (75' AGL)
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Mallard ducks
Comments from Report: Ingested a duck shortly after takeoff. Engine experienced an uncontained failure and was destroyed. Aircraft had to be towed to ramp. Cost of repairs was \$800,000. Time lost was 60 hours.

Date: 8 February 1999
Aircraft: Beechcraft 1900
Airport: General Mitchell (WI)
Phase of Flight: Approach (3,000' AGL)
Effect on Flight: Engine shut down
Damage: Wing
Wildlife Species: Canada goose
Comments from Report: Twenty miles northeast of the airport, a goose passed through the leading edge, a fuel cell and a wing spar, lodging just in front of the aileron. Bird entered the fuel tank causing a leak. The aircraft landed safely with 1 engine out. Wing damage greatly affected the flight. Time out of service 10 days. Cost to repair \$30,000. Other costs totaled \$75,000.

Date: 22 February 1999
Aircraft: B-757
Airport: Cincinnati/Northern Kentucky Intl. (KY)
Phase of Flight: Takeoff (rotation)
Effect on Flight: Emergency landing
Damage: Both engines and wing
Wildlife Species: European starlings
Comments from Report: At rotation a flock of starlings crossed in front of the aircraft. First officer tried to climb over them but struck several hundred. Both engines ingested birds and were damaged. There was a massive clean up of 400 birds. NTSB investigated. Cost of repairs approximately \$500,000.

Date: 25 February 1999
Aircraft: Learjet 35
Airport: Kansas City Downtown (KS)
Phase of Flight: Approach (2000' AGL)
Effect on Flight: Engine shut down
Damage: Engine, wing
Wildlife Species: Snow geese
Comments from Report: On approach to Kansas City Downtown Airport, a flock of snow geese was encountered over Kansas City Intl. One hit the copilot's side window, blocking visibility, another was ingested by an engine which shut down. At least 8 birds hit the aircraft. The wing leading edge was damaged severely on both sides. Five carcasses were found on Kansas City Intl. Airport runway. A single engine landing was accomplished.

Date: 04 March 1999
Aircraft: DC-9
Airport: Kansas City Intl. (MO)
Phase of Flight: Approach (800' AGL)
Effect on Flight: Engine shut down
Damage: Both engines
Wildlife Species: Snow geese
Comments from Report: Aircraft struck a flock of snow geese and ingested birds in both engines. One engine shut down and the other was severely damaged but continued working. The aircraft landed without incident. NTSB investigated.

Date: 05 March 1999
Aircraft: B-737
Airport: New Orleans Intl. (LA)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Ingested 1 medium-sized bird on takeoff. Returned to the airport with 6 damaged fan blades.

Date: 16 March 1999
Aircraft: DC-9
Airport: Greater Pittsburgh Intl. (PA)
Phase of Flight: Approach
Effect on Flight: Unknown
Damage: Engine
Wildlife Species: Canada geese
Comments from Report: Two geese were struck on final approach. One engine was destroyed. Time out of service was 17 hours.

Date: 16 March 1999
Aircraft: SA-226
Airport: Boise Air Terminal (ID)
Phase of Flight: Takeoff (rotation)
Effect on Flight: Precautionary landing
Damage: Nose and engine
Wildlife Species: Mallard
Comments from Report: Strange sound heard at rotation followed by a strange smell in cabin. Made a precautionary landing. The SAS Vane was removed by the strike and the bird was ingested into a compressor where it bent an impeller blade. Engine was torn down and repaired at a cost of \$37,500. Time lost was three weeks with a \$27,000 loss of revenue.

Date: 17 March 1999
Aircraft: Learjet 35
Airport: Fort Lauderdale Executive (FL)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Engine
Wildlife Species: Egret or gulls
Comments from Report: A flock of egrets or gulls was struck on takeoff. Aborted takeoff was uneventful. Four engine fan blades were bent and compressor also had bent blades. Time out of service 77 hours. Cost was \$87,500 for repairs and loss of revenue.

Date: 09 April 1999
Aircraft: Learjet 25
Airport: Omaha Eppley Airfield (NE)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Both engines
Wildlife Species: Gulls
Comments from Report: A flock of gulls was struck on takeoff. Both engines sustained substantial damage. Aircraft returned and landed without incident.

Date: 07 May 1999
Aircraft: B-737
Airport: Lincoln Municipal (NE)
Phase of Flight: Takeoff (rotation)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Gulls
Comments from Report: A flock of gulls was struck on rotation. Aircraft returned and landed without incident. The #1 engine had an uncontained failure and was replaced. The flight was canceled. Engine parts were found on the runway.

Date: 11 May 1999
Aircraft: Cessna Citation
Airport: Long Beach (CA)
Phase of Flight: Approach (2,500' AGL)
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Rock dove (pigeon)
Comments from Report: Pilot believes a pigeon was ingested. The bird hit the temperature probe, which destroyed all 28 fan blades. Time out of service 504 hours. Cost to repair estimated at \$150,000. Company rented an engine while repairs were being made.

Date: 13 May 1999
Aircraft: B-747
Airport: Narita Intl. (Japan)
Phase of Flight: Not reported
Effect on Flight: Not reported
Damage: Engine
Wildlife Species: Unknown birds
Comments from Report: Unknown number of birds was ingested into #4 engine. All 38 blades were replaced.

Date: 19 May 1999
Aircraft: B-757
Airport: Chicago O'Hare Intl. (IL)
Phase of Flight: Climb (5,000' AGL)
Effect on Flight: Precautionary Landing
Damage: Engine
Wildlife Species: Herring gulls
Comments from Report: Unknown number of gulls was ingested into the # 1 engine 50 miles from the airport. Aircraft returned to land. Flight was canceled. Cost of repair estimated to be \$76,000, time out of service about 23 hours.

Date: 20 May 1999
Aircraft: BA-31 Jetstream
Airport: Kent County Intl. (MI)
Phase of Flight: Approach (1,500' AGL)
Effect on Flight: None
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Hit 1 medium sized bird. Engine change required. Time out of service 48 hours. Cost of repairs was \$200,000.

Date: 22 May 1999
Aircraft: Saab -340
Airport: Purdue University (IN)
Phase of Flight: Landing roll
Effect on Flight: None
Damage: Engine, propeller, lights
Wildlife Species: Canada geese
Comments from Report: Struck at least 4 geese. The propeller on each engine was damaged. Time out of was service over 80 hours. Cost was \$1.2 million.

Date: 12 June 1999
Aircraft: Beechcraft 90
Airport: Westchester County (NY)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Landing gear, nose, engines, props, wings, fuselage, lights
Wildlife Species: Coyote
Comments from Report: Aircraft struck a coyote at night. Nose gear was torn from aircraft causing other parts of plane to be damaged. Time out of service was 5 months, lost revenue was \$55,000 and cost of repairs was \$550,000.

Date: 28 July 1999
Aircraft: B-767
Airport: Ben Gurion Intl. (Israel)**
Phase of Flight: Climb
Effect on Flight: Engine shut down, emergency landing
Damage: Engine, cowling, radome and landing gear
Wildlife Species: Unknown birds
Comments from Report: Aircraft ingested a flock of birds shortly after takeoff and made an emergency landing. Crew reported a fireball exiting from the exhaust and engine vibration. Engine was shut down. Engine had an uncontained failure. Large hole in engine cowl from fan blades. Overweight landing blew tires. Eight tires and brakes had to be replaced. More than 200 passengers had to be put on other flights.

Date: 31 July 1999
Aircraft: B-737
Airport: Baltimore Washington Intl. (MD)
Phase of Flight: Takeoff
Effect on Flight: Emergency landing, engine shut down
Damage: Engine
Wildlife Species: Gull
Comments from Report: Aircraft ingested a gull. The engine was shut down and an emergency was declared. The aircraft landed without incident and had to wait 4 days for a replacement engine.

Date: 5 August 1999
Aircraft: DC-10
Airport: Detroit Metropolitan (MI)
Phase of Flight: Landing roll
Effect on Flight: Engine shut down
Damage: Engines 1 and 3
Wildlife Species: Geese
Comments from Report: Aircraft hit several geese upon landing. The #1 engine flamed out and was shut down immediately. Engines 1 and 3 were replaced. Total cost \$700,000.

Date: 28 August 1999
Aircraft: MD-80
Airport: Portland Intl. (OR)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Engines, nose, landing light, fuselage
Wildlife Species: European starlings
Comments from Report: Aircraft hit 250 starlings at takeoff. Pilot thought he had blown a tire. Both engines ingested birds and vibration increased. Pilot made a precautionary landing and landed overweight. Both engines were damaged; 1 required 5 sets of fan blades the other engine was changed. Crew and many passengers refused to get on another flight. Medical team treated two passengers for possible injuries. Runways that served large aircraft were shut down for 45 minutes. Time out of service was 60 hours and cost reported as \$81,000.

Date: 13 September 1999
Aircraft: B-737
Airport: Chicago Midway (IL)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Engine
Wildlife Species: Red-tailed hawk
Comments from Report: Aircraft ingested a red-tailed hawk on takeoff destroying the engine. Cost of repairs and other costs totaled \$476,250. Time out of service was 144 hours.

Date: 19 September 1999
Aircraft: MD-83
Airport: Wichita Mid-Continent (KS)
Phase of Flight: Climb (50' AGL)
Effect on Flight: Precautionary landing
Damage: Engine, landing gear, light, windshield wiper
Wildlife Species: European starlings
Comments from Report: Aircraft hit 30 starlings just after lift off. Burning smell noted. Emergency declared and aircraft returned to land. Birds found imbedded in landing gear and windshield wipers. Engine had several nicked blades. Nose gear down-lock spring broke. Taxi light missing a lens. Bent windshield wiper arm. Secretary of Agriculture, Dan Glickman was on board.

Date: 15 October 1999
Aircraft: C-182
Airport: Air Haven (NY)
Phase of Flight: Landing Roll
Effect on Flight: Other
Damage: Wing, landing gear, propeller, fuselage
Wildlife Species: White-tailed deer
Comments from Report: Pilot veered to avoid deer on runway and went into an embankment. Left wing snapped in half. Propeller and left landing gear were destroyed and the fuselage was damaged. Time out of service was 90 days and cost to repair was \$90,000.

Date: 15 October 1999
Aircraft: B-767
Airport: John F. Kennedy Intl (NY)
Phase of Flight: Landing Roll
Effect on Flight: Other
Damage: Engine
Wildlife Species: Osprey
Comments from Report: Osprey holding fish on centerline was ingested into #1 engine. Seven fan blades were damaged. The flight was delayed 1 ¼ hours. Cost of repairs was \$35,000.

Date: 20 October 1999
Aircraft: MD-80
Airport: Philadelphia Intl. (PA)
Phase of Flight: Climb (200' AGL)
Effect on Flight: Engine shut down
Damage: Engine
Wildlife Species: Gulls or geese
Comments from Report: Burning smell in cabin after bird was ingested. Plane started to shake. Emergency landing was made. Captain reported #2 engine a complete loss.

Date: 07 November 1999
Aircraft: American AA-1B
Airport: Lake Viking (MO)
Phase of Flight: Landing flare
Effect on Flight: Other
Damage: Not reported
Wildlife Species: Deer
Comments from Report: Aircraft struck a deer during the landing flare at night. Aircraft veered off the runway and stopped nose down 50 ft off the runway. Damage reported as substantial.

Date: 15 November 1999
Aircraft: BE-65
Airport: Alpine-Casparis Muni (TX)
Phase of Flight: Takeoff
Effect on Flight: Emergency landing
Damage: Wing, landing gear
Wildlife Species: Deer
Comments from Report: Pilot attempted to rotate the aircraft in order to avoid the deer, but the landing gear hit the deer. Ground personnel could not tell if there was any damage during a flyby. The tower could not see the right main landing gear. The pilot elected to land gear up however, the right main landing gear had not retracted. There was substantial damage to the right wing spar, landing gear and wheel assembly.

Date: 17 November 1999
Aircraft: Learjet 60
Airport: Truckee-Tahoe (CA)
Phase of Flight: Takeoff
Effect on Flight: Other
Damage: Not reported
Wildlife Species: Deer
Comments from Report: Aircraft struck a deer on takeoff. Fire ensued and was extinguished. There was substantial damage.

Date: 01 December 1999
Aircraft: B-727
Airport: Philadelphia Intl. (PA)
Phase of Flight: Climb (5,000' AGL)
Effect on Flight: Engine shut down
Damage: Engines,
Wildlife Species: Snow geese
Comments from Report: While climbing, aircraft hit 2-10 birds. Location was 5-8 miles west of airport. The engine was shut down and the aircraft returned to land. There was a hole in the wing and the engine was destroyed. Time out of service was 77 hours and cost was \$449,000.

Date: 03 December 1999
Aircraft: BE-58
Airport: Festus Memorial (MO)
Phase of Flight: Takeoff (rotation)
Effect on Flight: None
Damage: Landing gear, wing, engine and propeller
Wildlife Species: Deer
Comments from Report: During rotation, a deer collided with the landing gear. Indicators showed no problem. Upon landing, the left main gear collapsed damaging the left wing, engine and prop.

Date: 11 December 1999
Aircraft: B-747
Airport: Toledo Express (OH)
Phase of Flight: Takeoff
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Red-tailed hawk
Comments from Report: A hawk hit the nose bullet, which shattered and entered the engine. Caller to sheriff reported hearing a large boom and seeing one of the engines on fire as aircraft took off. Fuel was dumped and aircraft returned to land. Pieces of fan blades put large holes in the nose cowling. The engine was shut down due to vibration. Time out of service was 84 hours. Cost to repair was \$1.3 million.

Date: 02 January 2000
Aircraft: Hawker 800
Airport: Fort Myers Intl. (FL)
Phase of Flight: Approach (200' AGL)
Effect on Flight: None
Damage: Engine
Wildlife Species: Unknown, suspect gull
Comments from Report: Engine ingested at least 1 gull. No abnormal engine indications. Maintenance found damaged stator vanes and compressor blades. Time out of service was 4 days. Cost was \$90,000.

Date: 07 February 2000
Aircraft: DC-10-30
Airport: Subic Bay (Phillipinnes)
Phase of Flight: Climb (250' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Fruit bats
Comments from Report: Engine ingested at least 1 bat. Vibration was felt. Five damaged fan blades had to be replaced. Time out of service was 3 days. Cost of repairs was \$61,000. Other related costs totaled \$3,008,400.

Date: 19 February 2000

Aircraft: B-737
Airport: Midway (IL)
Phase of Flight: Climb (10' AGL)
Effect on Flight: Precautionary Landing
Damage: Engine
Wildlife Species: Red-tailed hawk

Comments from Report: Just after rotation on takeoff, a large bird was ingested and the engine vibration was high. Fan blades were damaged. The engine was operated at reduced thrust for the remainder of the flight. The landing was uneventful.

Date: 21 February 2000

Aircraft: A-320
Airport: San Diego Intl (CA)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Engine and landing light
Wildlife Species: Gulls

Comments from Report: Engine had several bent fan blades and a landing light was broken from striking a flock of gulls. The takeoff was aborted and the aircraft returned to the gate. 28 gull carcasses were removed, closing the runway for 15 minutes and causing 7 departure delays. The airline cancelled two flights inconveniencing 110 passengers. Cost for repairs and lost revenue was \$157,000.

Date: 22 February 2000

Aircraft: A-320
Airport: Philadelphia Intl. (PA)
Phase of Flight: Climb (1,000' AGL)
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Geese

Comments from Report: Two geese were ingested, destroying the #1 engine. Overweight landing was made and emergency equipment was standing by. Time out of service was 48 hours. Cost was estimated at \$2.5 million.

Date: 24 February 2000

Aircraft: BA 125
Airport: Floyd Jones Memorial (MO)
Phase of Flight: Landing
Effect on Flight: None
Damage: Engine, wing, airbrakes
Wildlife Species: Deer

Comments from Report: Deer strike damaged the left wing flap which struck and damaged the engine cowling. Time out of service was 30 days. Cost to repair was \$200,000.

Date: 25 February 2000
Aircraft: B-737
Airport: Sacramento Intl. (CA)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Aircraft returned to airport after a bird strike on take-off. Pilots hear a loud bang and the plane suddenly yawed. Damage to 7 fan blades and a plugged air cooler.

Date: 02 March 2000
Aircraft: Beechcraft 350
Airport: Ryan Field (MN)
Phase of Flight: Descent (3,000' AGL)
Effect on Flight: None
Damage: Horizontal stabilizer
Wildlife Species: Canada goose
Comments from Report: Goose strike damaged the left horizontal stabilizer leading edge. Time out of service was 400 hours and costs including repairs and lost revenue were \$225,000.

Date: 05 March 2000
Aircraft: B-747
Airport: Forbes Field (KS)
Phase of Flight: Climb (2,500' AGL)
Effect on Flight: Engine shut down and precautionary landing
Damage: Engine
Wildlife Species: Unknown
Comments from Report: Ingested bird caused a compressor stall and flameout at 2500 feet AGL. The flight was diverted to Minneapolis St. Paul Airport. Engine was removed and replaced, also replaced nose cowl. Cost of repairs was \$445,990.

Date: 29 March 2000
Aircraft: B-767
Airport: Dulles International (DC)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Bonaparte's gulls
Comments from Report: Ingested a flock of gulls and returned to the airport. Fan blades were damaged. Passengers were put on later flights. Cost of repairs \$65,000.

Date: 12 April 2000
Aircraft: Cessna 500
Airport: KBPT)
Phase of Flight: Climb
Effect on Flight: Engine shut down
Damage: Engine, landing gear
Wildlife Species: Laughing gulls
Comments from Report: Ingested a flock of gulls just at lift-off. Left engine fan a total loss. Right main landing gear heat shield broke. Time out of service was 72 hours, cost was \$247,000.

Date: 19 April 2000
Aircraft: Piper 28
Airport: Cedar City Regional (UT)
Phase of Flight: Climb (2000' AGL)
Effect on Flight: Precautionary landing
Damage: Windshield, fuselage
Wildlife Species: Golden eagle
Comments from Report: An eagle shattered the windshield and injured the passenger (instructor) who was taken to the hospital with serious injuries. The eagle also hit the avionics bay, elevator control horn which pitched the aircraft into a dive. The pilot was able to gain control and landed safely at Provo Municipal.

Date: 25 April 2000
Aircraft: Saab 340
Airport: Houghton Memorial (MI)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Engine and prop
Wildlife Species: White-tailed deer
Comments from Report: Aircraft collided with two deer during takeoff just before V1. The left engine was substantially damaged. None of the 31 passengers was injured.

Date: 28 April 2000
Aircraft: B-727
Airport: Kansas City Intl. (MO)
Phase of Flight: Climb (150' AGL)
Effect on Flight: Precautionary Landing
Damage: Engine
Wildlife Species: Canada goose
Comments from Report: The #1 engine was destroyed when a goose was ingested. The flight returned safely. Seven flights were cancelled. Cost including repairs and lost revenue was \$250,000.

Date: 19 May 2000
Aircraft: Learjet 25
Airport: Allen County (OH)
Phase of Flight: Takeoff
Effect on Flight: Engine shut down, precautionary landing
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: The #2 engine was destroyed when a bird was ingested. Pilot declared emergency. The aircraft was diverted to another airport. Cost including repairs and lost revenue was \$113,000.

Date: 25 May 2000
Aircraft: Cessna 310
Airport: L M Clayton (MT)
Phase of Flight: Climb (600' AGL)
Effect on Flight: Lost control
Damage: Aircraft destroyed
Wildlife Species: Geese
Comments from Report: Aircraft collided with geese shortly after departure. Windshield shattered, right wing and fuel tank ripped off on impact. The aircraft was destroyed in a post-crash fire. Pilot was hospitalized with burns and lacerations.

Date: 01 June 2000
Aircraft: B-747
Airport: John F. Kennedy Intl (NY)
Phase of Flight: Takeoff
Effect on Flight: Engine shut down & precautionary landing
Damage: Engine and wing
Wildlife Species: Canada geese
Comments from Report: Aircraft hit 3 Canada geese on departure and returned to land. One goose was ingested in the #2 engine which was shut down. Emergency team responded but aircraft taxied to the ramp without incident. Damage was estimated at \$1.5 million.

Date: 6 June 2000
Aircraft: Hawker Siddeley HS 125
Airport: Burke Lakefront (OH)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Gulls
Comments from Report: Aircraft ingested a gull. Engine was replaced.

Date: 11 June 2000
Aircraft: B-737
Airport: Boston Logan (MA)
Phase of Flight: Climb (800' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown
Comments from Report: Large birds were ingested by the #1 engine damaging several fan blades and the booster. Pilot made a precautionary landing. Engine was changed because it could not be repaired on the wing. Time out of service was 24 hours and estimated cost was \$158,000.

Date: 26 June 2000
Aircraft: Saab 340
Airport: Dallas-Fort Worth (TX)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Engines
Wildlife Species: Not reported
Comments from Report: Takeoff was aborted after birds were ingested in both engines. The runway was closed for cleaning. Aircraft returned to the gate. Inspection found damage to both props.

Date: 26 June 2000
Aircraft: DC-10
Airport: Osaka International* (Japan)
Phase of Flight: Takeoff
Effect on Flight: Aborted takeoff
Damage: Engine
Wildlife Species: Unknown bird
Comments from Report: Takeoff was aborted after a large bird was ingested in the #3 engine. Ten fan blades were replaced. Time out of service was 36 hours. Cost of repairs was \$195,000 and lost revenue was estimated to be \$3 million.

Date: 27 June 2000
Aircraft: BA-32
Airport: W.B. Hartsfield Atlanta Intl. (GA)
Phase of Flight: Landing
Effect on Flight: None
Damage: Engine
Wildlife Species: Unknown birds
Comments from Report: Two medium sized birds were ingested. The compressor blades were bent. Cost of repairs was \$300,000.

Date: 14 July 2000
Aircraft: Fk-100
Airport: Chicago O'Hare Intl. (IL)
Phase of Flight: Takeoff
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: American crow
Comments from Report: Pilot heard thump and felt aircraft yaw slightly to the right. Foul odor in cabin Caution light for engine came on. Pulled back power on engine and returned to land. Emergency equipment was standing by. Engine was destroyed.

Date: 18 July 2000
Aircraft: Fk-100
Airport: Teterboro (NJ)
Phase of Flight: Climb (10' AGL)
Effect on Flight: Precautionary landing
Damage: Engines
Wildlife Species: European starlings
Comments from Report: Just after take off, the aircraft struck a flock of starlings. Both engines ingested birds and were damaged. Emergency equipment was standing by as the plane made an immediate return to the field. Over 40 carcasses were removed from the runway. Time out of service was 72 hours and costs totaled \$85,000.

Date: 23 August 2000
Aircraft: B-747
Airport: Philadelphia Intl. (PA)
Phase of Flight: Take-off
Effect on Flight: Aborted take-off
Damage: Engine, wing,
Wildlife Species: Canada geese
Comments from Report: The aircraft flew through a flock of about 30 Canada geese and ingested 1 or 2 in the #1 engine. The high-speed aborted take-off resulted in 9 flat tires. The aircraft was towed to the ramp. Time out of service was 72 hours. Engine was a total loss. Cost was \$3 million.

Date: 27 August 2000

Aircraft: B-747
Airport: Los Angeles Intl. (CA)
Phase of Flight: Climb (500' AGL)
Effect on Flight: Emergency landing
Damage: Engine
Wildlife Species: Western gull

Comments from Report: At least one Western gull was ingested just after take-off. Bystanders on a beach heard a giant backfire and saw the jet spewing 8- 10-ft flames. Three pieces of the engine fell to the ground, one 5-ft piece landed on a beach where people were having a cookout. No one was injured. The pilot dumped 83 tons of fuel over the ocean for over an hour and then made an emergency landing. The flight had 449 people who were not able to get another flight to Amsterdam until the next day. The costs reported do not include room and board. Time out of service was 72 hours and cost of repairs was \$400,000.

Date: 31 August 2000

Aircraft: B-737
Airport: LaGuardia (NY)
Phase of Flight: Descent (10,000' AGL)
Effect on Flight: Depressurized cabin
Damage: Windshield
Wildlife Species: Unknown

Comments from Report: Middle and inner panes were shattered when a bird hit the windshield, spraying glass all over the cockpit. The captain was cut. Windshield was making a creaking sound and glass shards were still coming off so pilot slowed the aircraft and depressurized the cabin. Both pilots reported ringing in their ears for several hours. Time out of service 48 hours.

Date: 08 September 2000

Aircraft: Piedmont Triad Intl (NC)
Phase of Flight: Climb (3,000' AGL)
Effect on Flight: Precautionary Landing
Damage: Engine
Wildlife Species: Unknown bird

Comments from Report: A medium sized bird was ingested into the #3 engine causing the suppression liner to pass through the engine. The aircraft returned to the airport. Time lost was 72 hours and cost totaled \$160,000.

Date: 22 September 2000
Aircraft: Hawker-Siddeley 125
Airport: Birmingham Intl. (AL)
Phase of Flight: Climb (20" AGL)
Effect on Flight: None
Damage: Engine
Wildlife Species: Unknown birds
Comments from Report: A flock of small birds was ingested on climb. The engine had to be replaced due to damaged blades. Time out of service was 120 hours. Cost not reported.

Date: 23 September 2000
Aircraft: BE-58
Airport: Greenville-Spartanburg Intl. (SC)
Phase of Flight: Approach (2500' AGL)
Effect on Flight: Precautionary Landing
Damage: Windshield
Wildlife Species: Vulture
Comments from Report: Bird was soaring above aircraft, then folded its wings and dived. It made a 1 ft sq. hole in windshield, ripping off the headset and cutting the pilot. Blood and remains splattered throughout the plane, odor was awful and wind noise was extreme. Cost was about \$80,000.

Date: 03 November 2000
Aircraft: B-737
Airport: La Guardia (NY)
Phase of Flight: Climb (400' AGL)
Effect on Flight: Engine shut down, precautionary landing at JFK
Damage: Engine
Wildlife Species: Herring gulls
Comments from Report: The engine must be replaced due to extensive damage after ingesting gulls. Feathers were sent to the Smithsonian for identification. The engine shut down and then restarted in flight. Aircraft was diverted to JFK for emergency landing.

Date: 08 November 2000
Aircraft: Saab-340
Airport: Aberdeen Regional (SD)
Phase of Flight: Approach (400' AGL)
Effect on Flight: Aircraft was grounded
Damage: Fuselage, wiper, propeller
Wildlife Species: Snow geese
Comments from Report: A flock snow geese was struck. The windshield wiper broke off, hit the prop which broke it into several pieces and threw it through the fuselage. A passenger was injured in the leg with the piece of metal and was taken to the hospital.

Date: 09 November 2000
Aircraft: A-319
Airport: Memphis Intl. (TN)
Phase of Flight: Climb (1000' AGL)
Effect on Flight: Precautionary landing
Damage: Engine
Wildlife Species: Unknown
Comments from Report: Ingested a bird into #2 engine. Returned to airport. Replaced first stage fan blades and forward and aft spinners.

Date: 03 December 2000
Aircraft: RV-6
Airport: Santa Maria (CA)
Phase of Flight: Approach (2000' AGL)
Effect on Flight: Aircraft was grounded
Damage: Windshield, stabilizer, wing
Wildlife Species: Hawk
Comments from Report: Hawk broke the windshield and pieces of it dented the leading edge of the stabilizer and rudder as well as cutting the passenger. Medical expenses totaled about \$1000. Time out of service was 2 months and costs are estimated at \$3,000 to \$5,000.

Date: 05 January 2001
Aircraft: B-757
Airport: Miami Intl. (FL)
Phase of Flight: Climb (100' AGL)
Effect on Flight: Precautionary landing, engine shut down
Damage: Engine
Wildlife Species: Turkey vulture
Comments from Report: The number 2 engine ingested one or more turkey vultures just after lift off. There were at least 20 circling vultures. The engine failed and the captain returned to land without incident. Time out of service was 7 days and cost was estimated at between \$200,000 and \$2 million.

Date: 14 January 2001
Aircraft: Learjet 60
Airport: Troy Municipal (AL)
Phase of Flight: Landing
Effect on Flight: Aircraft was destroyed
Damage: Aircraft destroyed
Wildlife Species: White-tailed deer
Comments from Report: The Learjet collided with two deer and ran off the end of the runway into a ditch because the thrust reversers would not operate. The aircraft burst into flames. Rescuers kept the fire from reaching the pilots for about 40 minutes until they could be removed. The pilot and first officer had serious injuries and were flown to a hospital. The plane was owned by the Dallas Cowboys owner.

Date: 21 January 2001
Aircraft: MD-11
Airport: Portland Intl. (OR)
Phase of Flight: Take off
Effect on Flight: Aborted take-off, engine shut down
Damage: Engine
Wildlife Species: Herring gull
Comments from Report: The #3 engine ingested a Herring gull. The engine stall blew off the nose cowl that was sucked back into the engine and shredded. The engine had an uncontained failure. The pilot aborted take-off and blew two tires. 217 passengers were safely deplaned and rerouted to other flights.

Date: 25 February 2001
Aircraft: BE-95
Airport: San Antonio Intl. (TX)
Phase of Flight: Approach (150' AGL)
Effect on Flight: None
Damage: Windshield, radio
Wildlife Species: Vulture
Comments from Report: Pilot saw bird overhead. Bird tuckered and dove at aircraft shattering the right windscreen. Two passengers received minor injuries. Pilot could not contact tower because the radios were inoperable due to the bird strike. The plane landed without incident.

- *American-based airline at a foreign airport.
- ** Selected non-USA strikes included in report to provide additional examples of impact wildlife has on aviation